# Review Topics for Exam 2

## Chapter 18. Ethers & Epoxides
- **Nomenclature (18.1)**
- **Structure & Properties (18.2)**
- Ether synthesis (18.3 – 18.4, 18.7)
  - Williamson ether synthesis (mechanism & limitations)
  - Alkoxymercuriation (mechanism & limitations)
  - MCPBA Epoxidation
  - Epoxidation through halohydrins
- Reactions of ethers & mechanisms (18.5, 18.8)
  - Acidic cleavage
  - Ring opening of epoxides (acidic & basic)
- Spectroscopy (18.10)
- Synthesis of organic compounds containing ether groups

## Chapter 19. Aldehydes & Ketones
- **Nomenclature (19.1)**
- Preparation of carbonyl compounds (19.2)
  - Aldehydes (New reagent = DIBAH)
  - Ketones (New reaction = cuprate + acid chloride)
- Oxidation of aldehydes and ketones (19.3)
  - PCC vs. CrO₃ – mechanisms
- Nucleophilic addition to aldehydes and ketones (19.4 – 19.12)
  - mechanisms
  - relative reactivities
  - Reversible processes: *hydration*, *cyanohydrin* formation, *acetal* formation, *imine* formation, *enamine* formation

## Chapter 20. Carboxylic Acids
- **Nomenclature (20.1)**
- **Structure and Properties (20.2)**
- Acid/base properties (20.3 – 20.5)
- Preparation of carboxylic acids (20.6)
  - oxidation
  - nitrile hydrolysis
  - Grignard + CO₂
- Reactions of carboxylic acids (20.7 – 20.8)
  - LiAlH₄ reduction
  - BH₃ reduction
- Spectroscopy (20.9)
- Synthesis of organic compounds containing carboxylic acid groups